BMCD175
X-band to L-band outdoor block downconverter with IF diplexer

MAIN FEATURES

- Downconversion with programmable LO signal
- Excellent phase noise parameters
- Low level of spurious signals
- High stability internal reference
- RS422/RS485 or Ethernet control
- IP67 construction
- IF diplexer for combining L-band output with standard S-band downlink signal

DESCRIPTION

This high performance outdoor block downconverter is intended for use in professional applications in X-band such as satellite earth stations. The BMCD175 includes a single conversion downconverter stage with appropiate filtering, a low phase noise local oscillator, a microprocessor based monitor and control circuitry, and power supply. It is operated from AC power supply. BMCD175 can be controlled via RS422/RS485 or Ethernet. External reference has dedicated connector. This downconverter is housed in an outdoor IP67 rated cabinet. The IF output is equipped with a diplexer that can combine the 1800-2100MHz IF output of the downconverter with a standard S-band downlink signal (2200-2300MHz).

SPECIFICATIONS

GENERAL	
RF input frequency	7.9-8.4GHz
IF output frequency	1950MHz
Type	Single conversion without inversion
No. of Channels	1
Local source	Internal programmable LO source
INPUT CHARACTERISTICS	
RF input frequency	7.9-8.4GHz (RF filter is 7.8-8.5GHz)
Input power range	-70...-15dBm (lowest level is determined by wideband noise, highest level is determined by transfer gain and output P1dB)
Nominal input impedance	50Ω
Input return loss	≥18dB
LO leakage at RF input	≤-80dBm
OUTPUT CHARACTERISTICS	
IF output frequency	1950MHz
IF bandwidth (-1dB points)	300MHz
Nominal output impedance	50Ω
Output return loss	≥18dB
Output P1dB	≥+15dBm
LO leakage at IF output	≤-80dBm

BHE
BONN HUNGARY
ELECTRONICS LTD.
IPARI PARK STR. 10. BUDAPEST, H-1044
P.O. BOX 164. BUDAPEST, H-1325
TEL: +36 1 233 2138
FAX: +36 1 233 2506
EMAIL: SALES@BHE-MW.EU
WEB: WWW.BHE-MW.EU

TRANSFER CHARACTERISTICS		
Nominal conversion gain		35dB±1dB at maximum gain
Gain adjustment		25dB minimum, in 0.25dB steps
Attenuation step		0.25dB
TRANSFER CHARACTERISTICS		
Gain flatness		≤±1dB, typical ±0.5dB
Gain slope		≤0.5dB in any 40MHz band
Gain stability		≤0.25dB/day @ constant temperature
Noise figure		≤10dB, 7dB typical at maximum gain
Image rejection		≥80dB
3rd order IMD		≤-50dBc with two in-band signals 0dBm at output
AM/PM conversion		≤0.1°/dB@Pout=0dBm
Group delay	Linear	≤0.03ns/MHz
	Parabolic	≤0.01ns/MHz^2
	Ripple	≤1ns peak-peak
Spurious	Signal related	≤-65dBc
	Signal independent	≤-80dBm
Harmonics		≤-40dBc @ 0dBm output power
EXTERNAL REFERENCE INPUT		
Frequency		The equipment shall lock on 5MHz and 10MHz automatically.
Connector		Separate N female or L-band output port
Level		0dBm±3dB
Nominal input impedance		50Ω
Reference input return loss		≥18dB
LOCAL OSCILLATOR CHARACTERISTICS		
Type		Programmable in 1MHz steps
LO frequency		5950-6450MHz
Frequency stability		≤±0.05ppm within temperature range on internal reference
Frequency aging		≤±0.1ppm/year
Phase Noise	@10Hz	≤-48dBc/Hz
	@100Hz	≤-75dBc/Hz
	@1kHz	≤-85dBc/Hz
	@10kHz	≤-95dBc/Hz
	@100kHz	≤-95dBc/Hz
	@1MHz	≤-110dBc/Hz
EXTERNAL COMBINER PARAMETERS		
L-band input frequency range		1800-2100MHz
S-band input frequency range		2200-2300MHz
Insertion loss		<1dB
Return loss		≥20dB
Rejection on L-band input		60dB @ DC-1700MHz and 2200-4000MHz
Rejection on S-band input		60dB @ DC-2100MHz and 2400-4000MHz

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CONTROL & MONITORING	
Control and monitoring interface	RS422/RS485 and TCP/IP based remote monitoring and control over 10/100BaseT Ethernet
Monitored parameters	receive frequency, output level, reference source, reference PLL status, main PLL status, secondary DC supply voltage and current, temperature
Status LED	1 LED (power ON, alarms)
MECHANICAL CHARACTERISTIC	
Dimensions	180x155x43mm (excluding connectors) for downconverter 180x155x50mm (excluding connectors) for diplexer
Weight	<2kg for downconverter <2.2kg for diplexer
RF output connector	N female
IF input connector	N female
Reference input connector	N female
Diplexer L-band input	N female
Diplexer S-band input	N female
Diplexer combined output	N female
Control & monitor connector	Amphenol MS3112E12-10S
AC power connector	Amphenol MS3112E12-3P
POWER SUPPLY CHARACTERISTICS	
Voltage	90-264VAC
Frequency	47-63 Hz
Power consumption	≤10W
Fuse	Resettable fuse
Power connector	Amphenol MS3112E12-3P
ENVIRONMENTAL CHARACTERISTICS	
Operational temperature range	-40 to +70°C
Storage temperature range	-40 to +85°C
Relative humidity	Up to 100% (condensing)
Ingress protection	IP67
Vibration	according MIL-STD-810G Method 514.6-Cat 16 0.04g2/Hz from 20Hz to 1kHz, -3dB/octav 1kHz-2kHz
Shock	½ sinus 30g, 11msec on 3 axis
ENVIRONMENTAL CHARACTERISTICS	
MTBF	50000 hours
Life duration	10 years
CE certification	provided
ROHS certification	provided
Warranty	1 year

Specifications are subject to change without notice.

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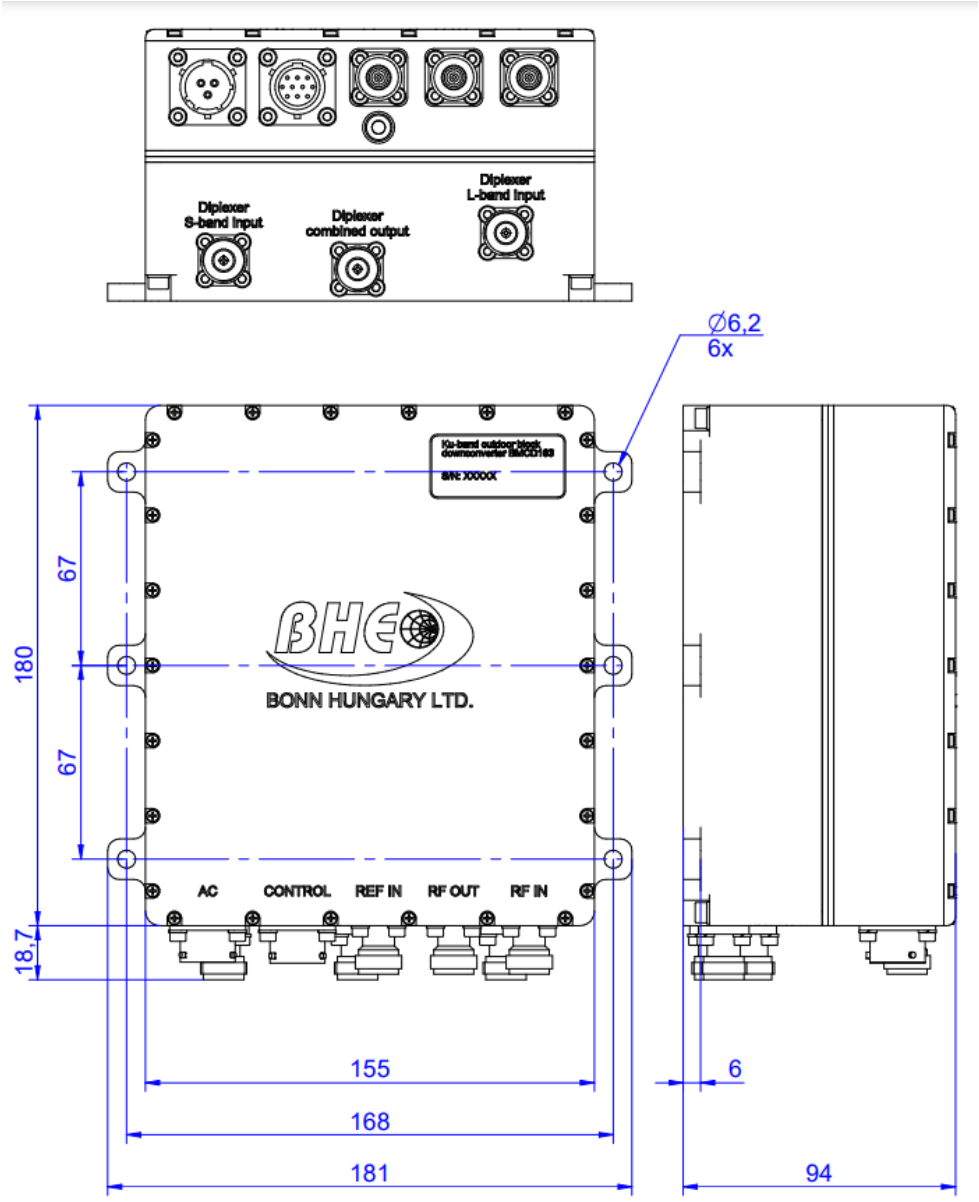
OUTLINE DRAWING (mm)



ORDERING INFORMATION

MODEL NUMBER	DESCRIPTION
BMCD175K11352	BMCD175 X-band to L-band outdoor block downconverter with IF diplexer

DOCUMENT REVISION

DOCUMENT NAME	REVISION	DATE
BMCD175-LM-K11352	V03	2023/09/13